

Grade 7 · Proportional Relationships · Quiz

Common Core 7.RP.A.2a, 7.RP.A.2b, 7.RP.A.2d · mathovore.fr

Name: _____ Date: ____/____/____ Score: _____

Try these 10 multiple-choice questions on proportional relationships. Read the tables, graphs and bar models carefully, find the ratio of y to x , and remember that a proportional graph is a straight line through the origin.

Grade 7 Common Core: 7.RP.A.2a · 7.RP.A.2b · 7.RP.A.2d

Questions

Question 1

What is the constant of proportionality for this table?

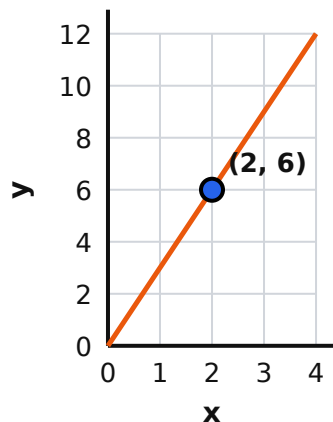
x	2	3	4
y	10	15	20

Each y is a multiple of x .

- A. 3
- B. $\frac{1}{5}$
- C. 8
- D. 5

Question 2

The graph shows a proportional relationship. What is the constant of proportionality?



A proportional graph.

- A. 6
- B. $\frac{1}{3}$
- C. 2
- D. 3

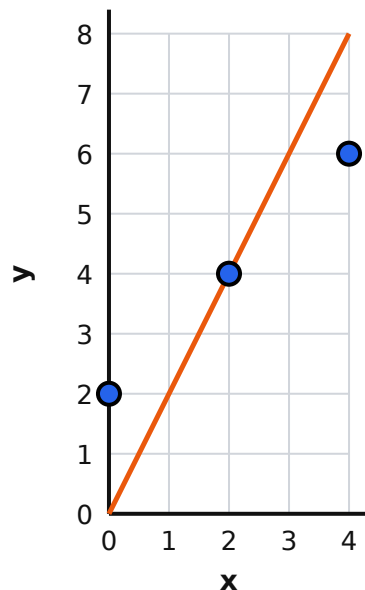
Question 3

Which set of ordered pairs (x,y) is proportional?

- A. $(1,3), (2,5), (3,7)$
- B. $(1,3), (2,6), (3,9)$
- C. $(1,4), (2,6), (3,8)$
- D. $(1,2), (2,5), (3,8)$

Question 4

Why is this graph not a proportional relationship?



A line that crosses the y-axis above zero.

- A. The line is not straight.
- B. The line goes up too slowly.
- C. The line does not pass through the origin.
- D. The points are not whole numbers.

Question 5

A proportional graph contains the point $(4,10)$. Which point must also be on the graph?

- A. $(2,5)$
- B. $(6,12)$
- C. $(5,11)$
- D. $(8,14)$

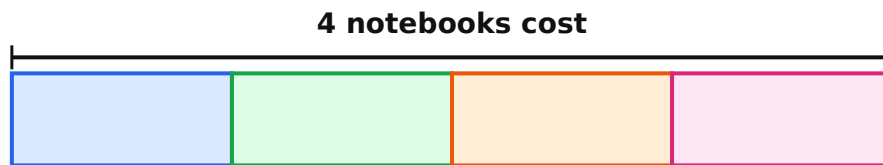
Question 6

On the graph of a proportional relationship, what does the point $(1,r)$ represent?

- A. The starting amount when $x=0$
- B. The unit rate: the value of y for 1 unit of x
- C. The sum of x and y
- D. The point where the graph crosses the x -axis

Question 7

The bar model shows the cost of 4 notebooks. What is the constant of proportionality?



Four equal parts make .

- A. \$4 per notebook
- B. \$24 per notebook
- C. \$6 per notebook
- D. \$18 per notebook

Question 8

Jamal types 150 words in 3 minutes and 250 words in 5 minutes. Which statement is true?

- A. The words are proportional to the minutes, with $k=50$ words per minute.
- B. The words are not proportional, because 250 is not double 150.
- C. The words are proportional, with $k=3$ words per minute.
- D. The words are proportional, with $k=\frac{1}{50}$ word per minute.

Question 9

A table has the pairs $(2,7)$, $(4,13)$, $(6,19)$. Which statement is true?

- A. It is not proportional, because $\frac{7}{2} \neq \frac{13}{4}$.
- B. It is proportional, because y increases by 6 each time.
- C. It is proportional, because every y -value is odd.
- D. It is proportional, because x increases by 2 each time.

Question 10

The cost y of x gallons of paint is proportional. What does the point $(0,0)$ mean?

- A. 1 gallon costs \$0.
- B. 0 gallons cost \$0.
- C. \$0 buys 1 gallon.
- D. The paint has a \$0 fee for each gallon.

Answer key

1. **D** - $\frac{10}{2} = \frac{15}{3} = \frac{20}{4} = 5$. Using the difference $y - x$ gives different numbers, so it cannot be k .
2. **D** - $k = \frac{y}{x} = \frac{6}{2} = 3$. Reading only the y -coordinate, 6, is a common mistake.
3. **B** - Only the first set has a constant ratio: $\frac{3}{1} = \frac{6}{2} = \frac{9}{3} = 3$. The others go up by a constant amount but their ratios change.
4. **C** - A proportional graph must be a straight line through the origin. This line is straight but crosses the y -axis at $(0,2)$.
5. **A** - Halving both coordinates keeps the ratio $\frac{10}{4} = \frac{5}{2}$. Adding the same number to both coordinates does not keep the ratio.
6. **B** - When $x = 1$, $y = k \cdot 1 = k$, so $r = k$ is the unit rate.
7. **C** - $k = \frac{24}{4} = 6$. Dividing 4 by 24 or using the total as the price are common mistakes.
8. **A** - $\frac{150}{3} = \frac{250}{5} = 50$, so the ratio is constant. The numbers 150 and 250 do not need to be doubles of each other.
9. **A** - The ratios are 3.5, 3.25 and about 3.17. A constant increase is not enough for a proportional relationship.
10. **B** - $(0,0)$ pairs 0 gallons with a cost of \$0, which is why proportional graphs pass through the origin.

Remember:

- A relationship is proportional when $\frac{y}{x}$ is the same constant k for every pair.
- The constant of proportionality k equals the unit rate: the value of y when $x = 1$.
- A graph is proportional only if it is a straight line through $(0,0)$.
- The point $(1,k)$ on a proportional graph shows the unit rate.
- A table that does not give a constant ratio, or a line that misses the origin, is not proportional.